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Service

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Date: October 3, 2008

Subject: Prairie Knolls Forest Health Project

To: District Ranger, Williams RD, Kaibab NF

On October 1, 2008, I visited the Williams Ranger District, Kaibab NF, at the request of Mark Herron to discuss and evaluate a potential forest health project on the District. I describe in this report general existing stand conditions, what bark beetle activity was observed in this area, and make recommendations to minimize future bark beetle impacts.

### ***Prairie Knolls Forest Health Project***

The District is proposing to non-commercially thin approximately 300 acres within the larger Government Environmental Assessment (**Figure 1**). The objectives of the project are to 1) reduce risk of bark beetle infestation, 2) increase tree vigor and growth, and 3) reduce risk of catastrophic crown fire on the Forest and adjacent private property.

The general prescription includes thinning from below to 9 – 12 inches diameter at breast height (dbh) to an average stand density of 50 to 70 trees per acre. On lands adjacent to private property, slash will be machine or hand piled; while on the remaining areas to be treated, slash will be lop-and-scattered to 2 feet.

Units that are planned to be thinned in 2009 include portions of 29 and 38-42. I conducted a walkthrough survey of units 29 and 38 to observe stand conditions, bark beetle activity, and general health conditions of the forest stands.

Unit 29. Stands to be treated are dominated by dense, second growth ponderosa pine less than 14 inches dbh (**Figure 2**). There are also a few pockets of more open-grown yellow pines. Bark beetle activity is currently low within the stands surveyed, but there was evidence of higher levels of activity during the 2002-2003 outbreak (**Figure 2**).

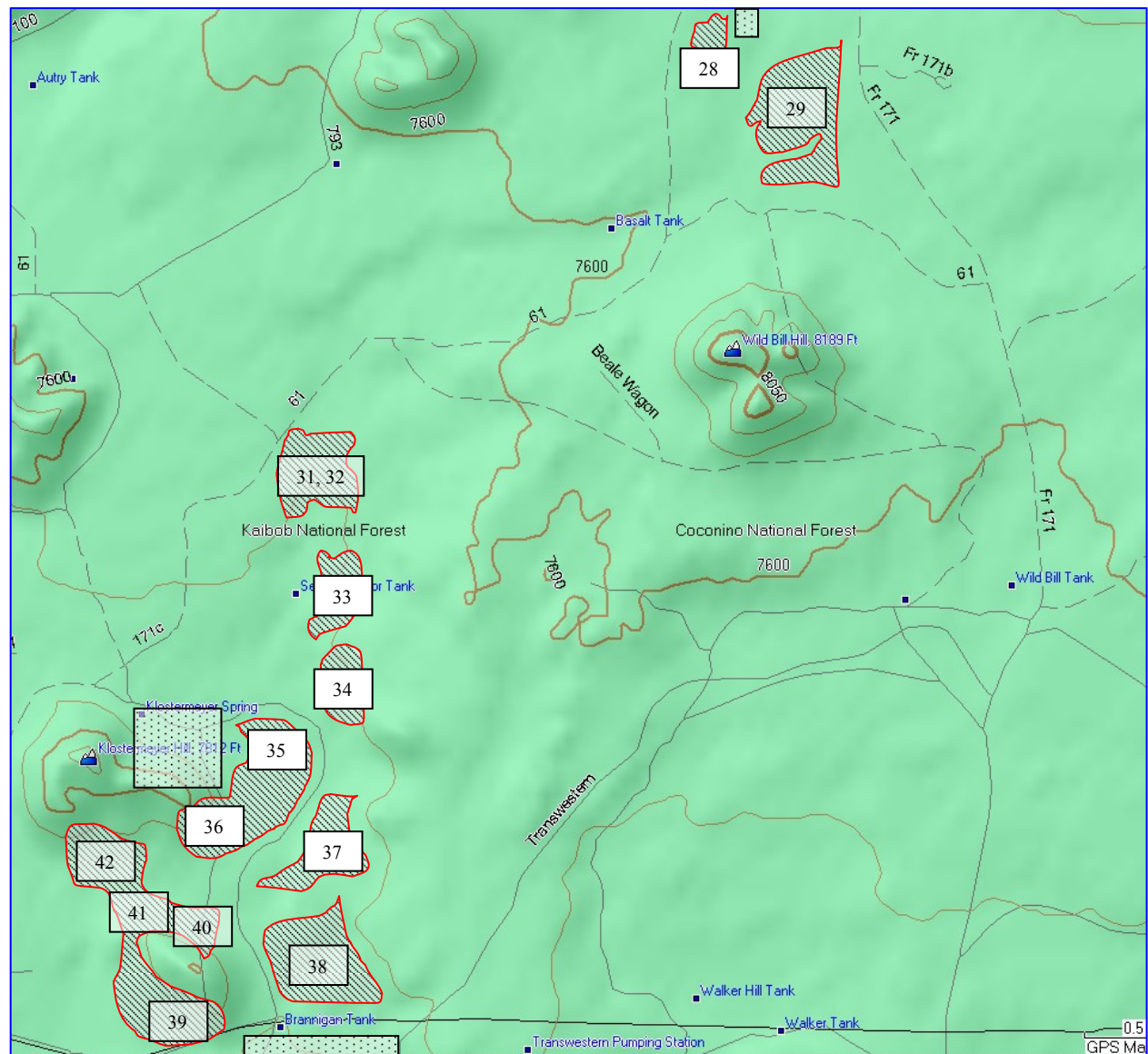
Unit 38. Similar to Unit 29, stands to be treated are dominated by dense, second growth ponderosa pine less than 14 inches dbh (**Figure 3**). Some stands within Unit 38 were previously treated. Bark beetle activity is currently low within the stands surveyed, but there was evidence of higher levels of activity during the 2002-2003 outbreak. Low to moderate levels of dwarf mistletoe infection were observed in unit 38 (**Figure 3**).

### ***Recommendations***

The proposed project area for non-commercial thinning treatments will help to reduce the overall susceptibility of stands to bark beetle attack in the long term as well as improve overall tree



vigor, lessen risk of catastrophic wildfire, and improve vegetative species diversity. If limited funding is available, units adjacent to private property should receive the higher priority for treatment. The proposed project areas are covered by Government EA.



**Figure 1.** Approximate location of stands (hatched polygons and unit numbers) in the Prairie Knolls Forest Health Project on the Williams RD. Private lands are indicated by stippled boxes.

High stand densities reduce both individual tree and stand vigor and therefore increases stand susceptibility to mortality from bark beetles (Fettig et al. 2007). Over the past several years the Kaibab NF has seen high levels of ponderosa pine mortality. Competition from smaller trees for water has also greatly increased the mortality risk of scattered large yellow pine. In addition,

continuous interlocking crowns and well-developed fuels ladders leaves vegetation on these sites at a high risk of loss from catastrophic wildfire.

Thinning from below has been experimentally demonstrated to increase the resistance level of the residual mature pine overstory (Feeney et al. 1998, Kolb et al. 2007). However, thinning slash may pose a short-term risk to residual trees in the thinning units or surrounding areas depending on the timing of thinning, local population of pine engraver beetles, and site and environmental factors such as site quality and precipitation (Fettig et al. 2007). Careful monitoring of beetle populations associated with these thinning projects should be implemented. DeGomez et al. (2008) and Parker (1991) provides guidelines for minimizing pine engraver beetle impacts associated with thinning treatments, such as thinning during periods of bark beetle flight inactivity.

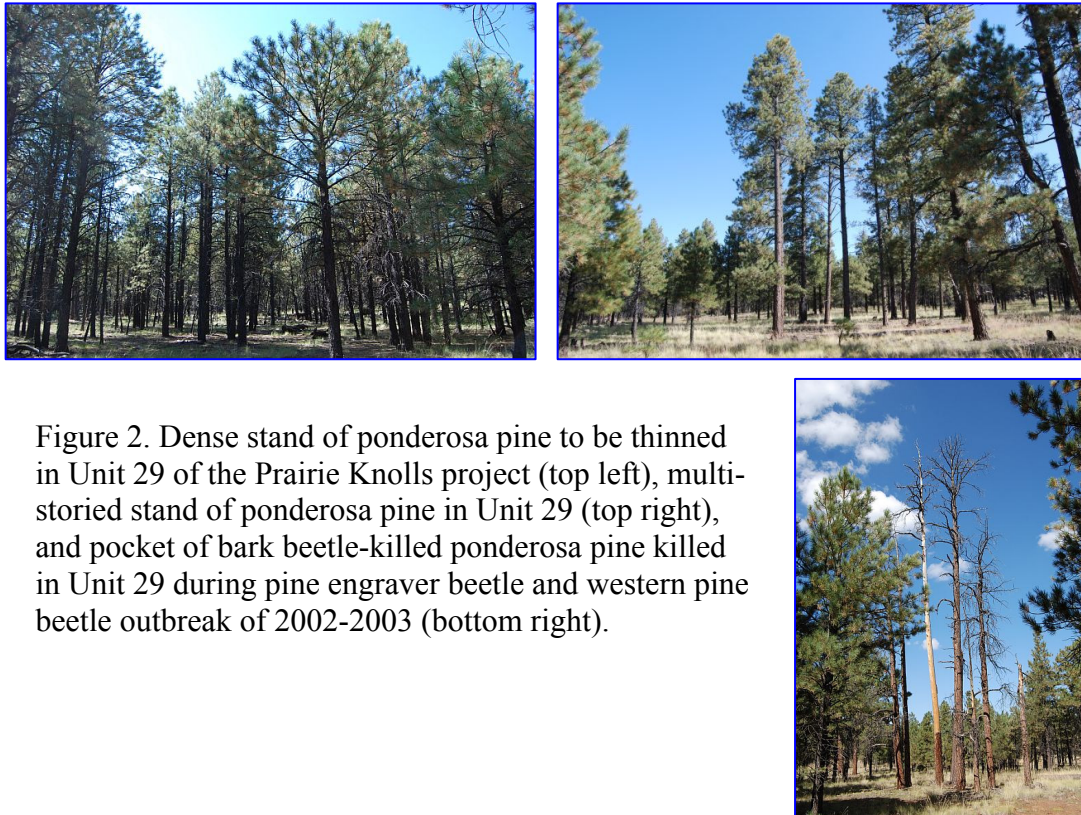


Figure 2. Dense stand of ponderosa pine to be thinned in Unit 29 of the Prairie Knolls project (top left), multi-storied stand of ponderosa pine in Unit 29 (top right), and pocket of bark beetle-killed ponderosa pine killed in Unit 29 during pine engraver beetle and western pine beetle outbreak of 2002-2003 (bottom right).



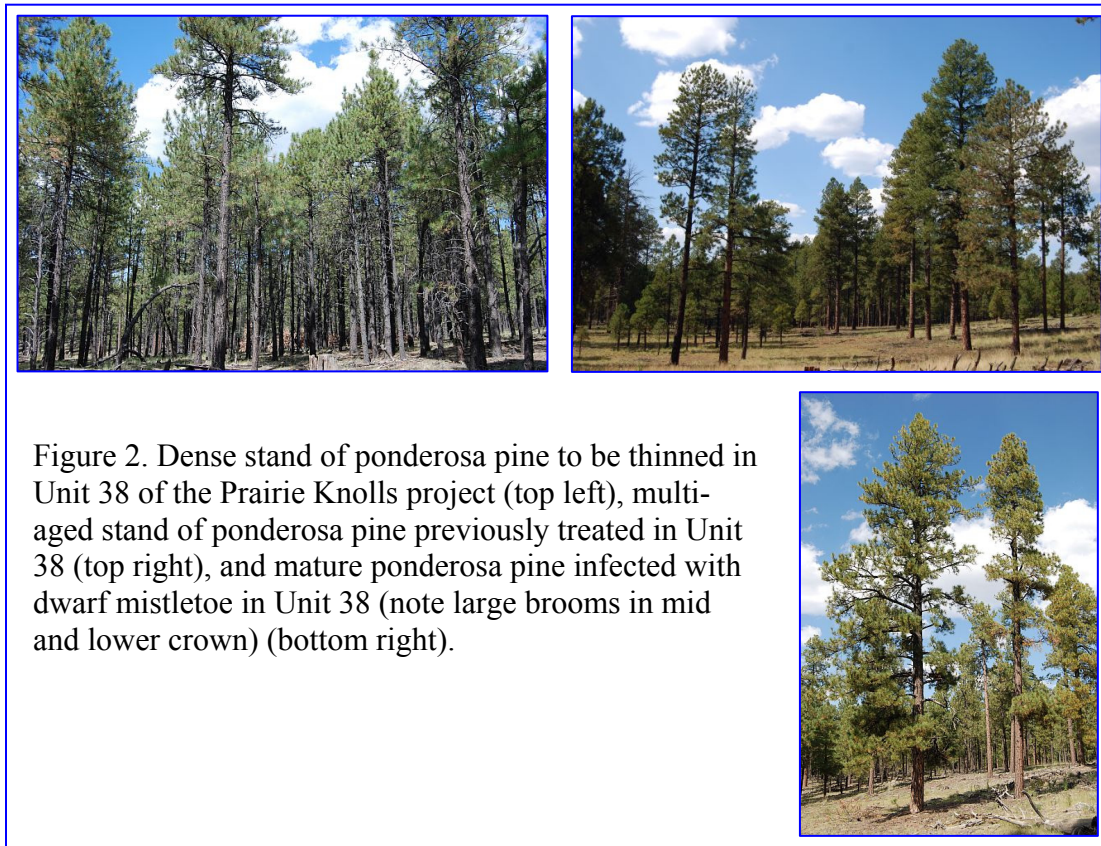


Figure 2. Dense stand of ponderosa pine to be thinned in Unit 38 of the Prairie Knolls project (top left), multi-aged stand of ponderosa pine previously treated in Unit 38 (top right), and mature ponderosa pine infected with dwarf mistletoe in Unit 38 (note large brooms in mid and lower crown) (bottom right).

Requests for Forest Health Protection prevention/suppression funds should be submitted no later than October 10, 2008. If you have any questions regarding this assessment of current bark beetle activity within the proposed project areas or with the recommendations, please contact Joel McMillin at (928) 556-2074.

*/s/ Joel D. McMillin*

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**References Cited**

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